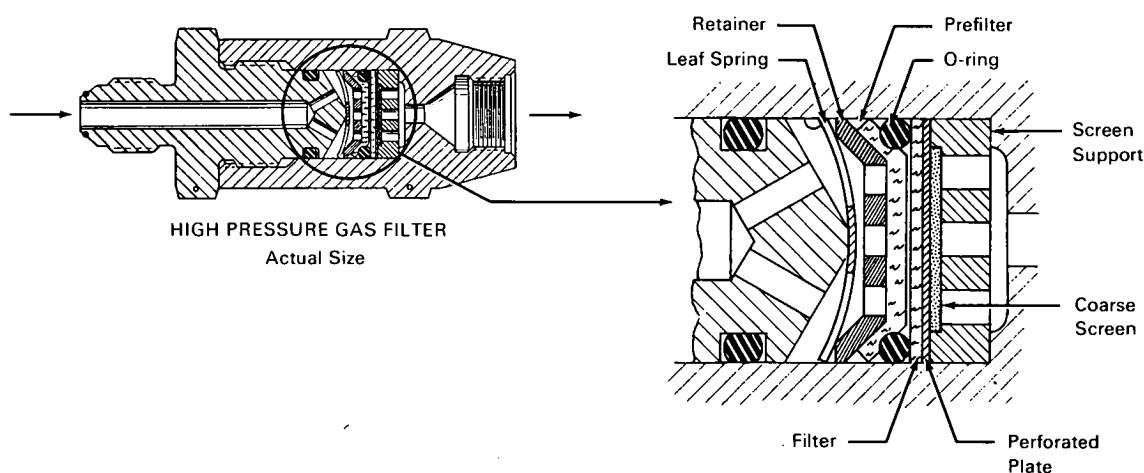


NASA TECH BRIEF



This NASA Technical Brief is issued by the Office of Technology Utilization to acquaint industry with the technical content of an innovation derived from the NASA space program.

Filter for High-Pressure Gases Has Easy Take-Down, Assembly



The problem: To design a simple high-pressure filter that can be placed in tubing supplying sterilization gases and yet be easy to assemble and disassemble.

The solution: A metal filter body, about 2 inches long and 1 inch in diameter, is constructed so that the inlet end can be unscrewed. Inside there is a filter strongly supported on both sides and sealed by an O-ring. The design is such that all eight parts of the filter element can be taken out and easily reassembled.

How it's done: The inner end of the inlet fitting has a cone that presses against a leaf spring to keep the eight filter parts tightly in place. Other parts are, in order: a retainer with a conical shaped outer edge, a

deformable prefilter sheet, O-ring, filter, perforated plate, coarse screen, and screen support. Inclusion of the cone on the inlet fitting and of the leaf spring supplies axial pressure for sealing, yet applies only a minimum of torque to turn or distort the filter elements.

Gases are tightly sealed because the outer, conical edge of the retainer pushes against the deformable prefilter, which in turn forces an oversized O-ring against the filter. The filter is supported from the back by the screen, the perforated plate, and the screen support. Sealing with an O-ring not only offers the advantage of simplicity but, in this design, permits the use of a small-diameter filter body with good resistance to the stresses induced by the high-pressure gases.

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Note:

This filter is intended for high-pressure sterilization gas supply systems up to 12,000 psi but can be applied to similar high-pressure systems requiring a filter that can be readily taken apart.

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